

Zanzibar Protectorate.

Annual Report

OF THE

Agricultural Department

FOR THE YEAR

1930.



ZANZIBAR:

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1931.

Zanzibar Protectorate.

REPORT ON THE AGRICULTURAL DEPARTMENT FOR THE YEAR 1930.

The Annual Report for 1929 and the Agricultural Season ending June 30th, 1930 (written in November 1930), to a large extent covers the year 1930. Practically all that remains to complete the record for the year is to submit divisional reports and adjust statistics to December 31st.

STAFF.

The following table shows the strength and distribution of the European Staff during the year under review:—

Rank.	Name.	Period in Residence.
Director & Government Chemist	V. H. Kirkham, F.I.C., B.Sc. (London), Dip. Agric. (Cantab)	Whole year
Assistant Director	Harold Waterland, Dip. Agric. (Harper Adams)	March 3rd to Dec.
Assistant Government Chemist	L. W. Raymond, B.A., B.Sc. (London), A.I.C., A.R.C.S.	January to February 6th. September 11th to December.
Manager of Plantations	Graham Tomson	Whole year
Agricultural Officers	J. E. Baker, Cert. Agric. (Seale-Hayne)	January to March 8th. October 1st to Dec.
	J. R. P. Soper, B.A. (Cantab.)	Whole year
	T. D. Rutter, B.Sc., Agric. (London), A.I.C.T.A. (Trinidad)	January to March 5th. October 1st to Dec.
Produce Inspector.	T. M. W. Sheppard.	March 21st to Dec.

Mr. Raymond was appointed Acting Assistant Director of Agriculture from 1st January to 6th February.

Mr. Tomson was appointed Acting Assistant Director of Agriculture from 7th February to 2nd March.

Mr. T. M. W. Sheppard was appointed Produce Inspector from March 21st.

EUROPEAN STAFF IN PEMBA DURING 1930.

Mr. J. E. Baker, January to March 21st.

Mr. J. R. P. Soper, January to December 31st.

Mr. T. D. Rutter, October 7th to December 31st.

THE CLOVE INDUSTRY.

The clove harvest for the season 1929-30 has been recorded and the 1930-31 crop will be reviewed in the Annual Report for 1931 in accordance with instructions from the Secretary of State contained in Colonial Office Despatch No. 81 of 1st July, 1931.

INSPECTION OF CLOVES.

The work of inspection of cloves has been reported upon to the end of June. During the period July 1st to December 31st, the following consignments were offered for shipment:—

	July 1st to December 31st, 1930.		
	Examined.	Passed.	Failed.
Consignments	691	663	28
Bales	39,421	37,666	1,755

A total of 100,045 bales, representing 1,550 consignments were examined during the year (January to December) of which 97.5 per cent bales were passed for shipment, representing 97.4 per cent of the consignments. Most of the failures occurred during September and October when the new crop appeared on the market and there was an increase in the number of shipments.

ARTIFICIAL DRYING OF CLOVES.

A full account of the experiments conducted in connexion with the artificial drying of cloves is contained in the 1929 Annual Report and is recorded in the report of the Assistant Chemist appended hereto.

THE COCONUT AND COPRA INDUSTRY.

The position of the coconut and copra industry as on September 30th, 1930 has been explained and, unfortunately, had not improved at the end of the year. The quantity of locally produced copra exported during the twelve months amounted to 12,800 tons = 8,19,200 frasilas. This represents an increase of 1,171 tons over the previous year despite the depression in price, which at the end of the year had fallen to Rs. 2-25 cts. per frasila. Respecting this it may be of interest to remark that the decrease in price during 1930 was accompanied by a decrease in shipments from the principal copra exporting countries.

The fall in price is attributed to the following causes:—

- (a) A large increase in production during recent years.
- (b) An increase in the production of competitive oils including whale oil.

- (c) A decline in the demand for feeding cake and meal (cattle food). These are derived from residues after oil extraction and have attained such importance as to be regarded as somewhat more than by-products.
- (d) Well-organised buying by the principal users of copra, notably the Margarine Union. This combine is stated to have established a single buying agency which, on account of its extensive operations on the market, is able to influence prices.

In a former report the coconut was described as the sheet anchor which enabled the country to keep head on to the storms in the clove industry, but this is not now the case. The plantation owner can no longer depend upon the coconut to save him during an unfavourable clove season, and the sooner he realises this the better.

There was no marked improvement in the quality of copra produced during the year. Whenever opportunity occurred the need for improvement and the methods of effecting it were discussed with producers. Though all admitted the desirability of improved quality open invitation to inspect drying kilns and improved methods on Government Plantations met with no response. The apathy of the plantation owner in this matter appears to arise from his reluctance to spend money in connexion with a product of so low a marketable value. Furthermore, many owners do not produce copra but sell the nuts and permit the purchaser to prepare copra on the spot. Such owners are not disposed to erect kilns for the benefit of the purchaser; neither is the purchaser prepared to erect kilns on another person's property.

THE CLOVE GROWERS' ASSOCIATION.

The Secretary of State authorized a total sum of Rs. 7 lakhs to be placed at the disposal of the Association to enable advances to be made against cloves deposited for free storage and to pay harvesting loans.

The clove harvest was still in progress at the beginning of the year and consignments of members of the Association were received for free storage. The quantity deposited amounted to 14,113 frasilas against which a sum of Rs. 4,74,025 was advanced.

During the latter part of 1929 and early in 1930 the activities of the Association became so extensive that the staff in Pemba was hard pressed to cope with the work and, in consequence, it was discovered that the accounts had not been kept in such detail as was desirable. It was decided, therefore, to place them in charge of the Head Office, Zanzibar, and also to remove all cloves from the Association's godowns in Pemba and store them in Zanzibar in order to relieve the Pemba office of as much work and responsibility as possible.

Loans free of interest were issued for harvesting expenses as in former years and table No. I in the appendix shows comparisons between the amounts disbursed in 1929 and 1930. In cases where borrowers had deposited cloves with the Association the harvesting loans were converted to advances against the produce as security.

At the end of the year the Association had received from the Treasury a sum of Rs. 5,90,823 and was due from its members storage advances amounting to Rs. 4,51,011, commission and charges Rs. 5,987 and harvesting loans Rs. 12,363 a total of Rs. 4,69,362. Since then Rs. 3,88,000 have been refunded to the Treasury. Table II in the appendix shows the position of the Association at the end of the year.

PLANTATION INSPECTION.

As explained in the last report the staff of subordinate sub-inspectors and assistant sub-inspectors was to a large extent employed in connexion with Clove Growers' Association work and produce inspection.

A sub-inspector was detailed to inspect dealers' licences and a number of shopkeepers in the country districts were found trading in cloves and coconuts without being licensed. As the result of his activities twelve cases were taken to Court and convictions obtained.

A sub-inspector was also engaged in both Zanzibar and Pemba in serving notices demanding repayment of loans to loanees who had failed in this respect, and, later, in reporting the harvest prospects on the plantations of those asking for harvesting loans.

The Inspector of Plantations acted as Manager of Plantations from February 7th to March 2nd. For the remainder of the year he was largely occupied in assisting the Manager of Plantations.

The reports of the Agricultural Officer, Pemba, Manager of Plantations and Assistant Government Chemist follow.

H. WATERLAND,
Acting Director of Agriculture.

Zanzibar, 9th September, 1931.

ANNUAL REPORT OF AGRICULTURAL DEPARTMENT
PEMBA, 1930.

Staff.—Mr. Baker was in charge at Wete until March 6th, when Mr. Soper, previously stationed at Weshu, took over his duties. Mr. Soper remained at Wete for the rest of the year; Mr. Rutter took over the southern half of the island on October 7th, but ceased his duties on December 31st.

The clerical staff at the beginning of the year consisted of one 2nd grade clerk, two 3rd grade and two 4th grade; one sub-inspector and two assistant sub-inspectors were helping with the C.G.A. clerical work. As the harvest rush subsided, and the C.G.A. books were sent to Zanzibar, the staff was reduced to one 3rd grade acting as 2nd grade, and one 4th grade; this was the position from May onwards.

Clove Growers' Association.—The year opened with the harvest still in full swing at Wete, though at Chake Chake and Mkoani clove receipts were beginning to fall off. An account of this work has already been given in the 1929 Departmental Report.

Harvesting loans for the 1930 crop were issued in all three districts, beginning at Mkoani on July 24th. The amounts paid out were as follows:—

		Rs.
Mkoani	...	7,750
Chake Chake	...	1,665
Wete	...	9,125
Total Rs.	...	<u>18,540</u>

On December 31st, the following amounts were outstanding:—

		Rs.
Mkoani	...	1,925
Chake Chake	...	910
Wete	...	4,740
Total Rs.	...	<u>7,575</u>

Owing to the early masika and to lack of rain following it, the crop in the Wete district particularly fell far short of expectations; this fact explains the heavy Wete outstandings.

The Mkoani and Chake Chake outstandings are not serious, and should all be in by the end of February, 1931.

1929 outstandings were collected slowly, but legal action had to be taken in many cases; owing to lack of funds for court costs many actions could not be concluded in the year under review.

Shipments of 1930 cloves for storage in Zanzibar were far more active in the Mkoani district than in the other two; the figures are as follows:—

	Consignments.	Bags.
Wete	... 6	76
Chake Chake	... 7	138
Mkoani	... 47	808
Total	... 60	<u>1,022</u>

Picking rates were fixed in the Mkoani district only, and were observed well on the whole, though some very flagrant cases of non-observance were brought to light, one instance being the payment of Re. 1 for 3 pishis. Labour, for some inexplicable reason, was hard to obtain; it would appear that a large number of local natives feel that clove picking is "infra dig.", and they regard the picking season as an excellent opportunity for indulging in the more aristocratic work of keeping coffee shops, or of catching fish, in both of which they make more money for less bodily exertion.

Government Plantations.—A summary of the revenue and expenditure on each plantation is appended. It is difficult at present to state the position of affairs succinctly, for over 1,000 fraslās of cloves remain unsold, and there is also a hold over of nuts and copra from the last picking at Tundaa. By estimating the former at Rs. 13 per fraslā, there will be a profit on the normal working of Rs. 7,000; this figure is just not sufficient to cover the costs of other works under which heading all expenditure which is not a fair charge against the actual running of the plantations has been included. Supervision has been calculated for nurseries and experimental work on the proportion of labour, but it has been divided among the plantations on a stock basis.

All expenditure under "Other charges" has been put down as normal running expenses, but has not been split up.

Only three shambas bore good clove crops, viz. Fufuni, Kwamacho and Wete School; the first named was operated together with Tundaa, Wesha and Makondeni, but the crops on the last three were extremely small. It will be seen from the revenue statement that Fufuni cloves provided more revenue than all the other shambas put together; the cost of harvesting was Rs. 3-50 per fraslā, including transport to Mkoani, but excluding supervision. Labour was difficult to obtain, but quite a satisfactory proportion of the total crop was picked. All coconut crops except Tundaa were leased; on the operated estate the first picking was granted to the 1929 lessee in compensation for alleged damages, the other three pickings yielded 125,367 nuts. On an average 95 nuts made one fraslā of copra at an approximate cost of Re. 1. Though considerably later than the appointed time, all rents were paid up at the end of the year except Kwamacho, Minchenzani and Kichanjani.

The Plantations of Matangatwani, Makondeni and Tundaa were surveyed and divided into blocks, while a trace was made of the new Fufuni boundary.

Experimental Work.—Detailed costs are appended.

Clove Regeneration.—An extensive programme of felling old clove trees and replanting was put in hand at Matangatwani. In all, roughly five acres were cleared, lined and holed ready for planting in the big rains of 1931. Local inhabitants have been induced to

plant up the whole area with cassava as shade. Seeds of promising local legumes have been collected with a view to trying them as cover crops when the cassava is harvested.

At Makondeni manurial experiments on an acre plot planted in April are in progress. Four plots of 16 trees each, planted in 1922 on inferior soil, are also being treated with a view to finding some means of stimulating the rest of the area to more vigorous and healthy growth.

The trees planted on two acres, cleared in 1928, at Fufuni suffered severely in the dry weather, and most of them are dead.

Clove hedges at Makondeni gave 836 lbs. of green clippings.

Coffee.—One acre of *Coffea robusta* planted out in April, 1929, at Wesha has made excellent, if irregular, progress, and at the time of writing is ripening a small crop. Banana shade was considerably thinned during the early months of the year; the incidence of scale insects and other pests at once fell off.

Citrus.—Budded stock at Wete, Wesha and Makondeni has made a certain amount of progress, grapefruit on the whole being better than sweet orange. It would seem that citrus growing in Pemba needs far more attention in the checking of pests and diseases than is actually worth while. A further complication is the fact that nearly all budded stock when planted out develops a very strong tendency to form side shoots instead of putting its energy into the branches. Some of these shoots have been left for observation, but it is found that they rarely exceed one growing period; as they become hardened and dormant, fresh shoots arise even lower down the main stem.

Hydnocarpus Anthelmintica.—The acre plot at Matangatwani continues to grow slowly on poor soil.

Hydnocarpus Wightiana.—Nurseries were laid down in October and November at Kiyuyu, Makondeni, Mpona, Tundaua and Fufuni.

The germination has been extremely poor, in most cases not exceeding 2 per cent.

Taraktogenos Kurzii.—Thirty-two seedlings were planted out at Makondeni in March under the shade of *Cajanus indicus*. They made very poor progress until one half of the shade was cleared; the plants in this half at once began to form new leaves, though the others remained dormant. The other half reacted similarly when the shade was cut a month later; it would therefore appear that *Cajanus indicus* should be used with discretion as a cover; it may be that this was one of the causes leading to the failure of Cacao. The 40 trees at Wesha are doing well; part of the plot is now down to pineapples, part to pawpaw, and part to "kunde".

Pawpaw.—Seedlings from the superior tree which used to exist in Chake Chake are now in bearing at Wesha, and the fruit has far more flavour than the average obtainable in the Pemba local markets.

Pineapples.—At Makondeni several attempted to fruit, but were ruined by monkeys, which also took a delight in pulling out all the young leaves as they formed. At Wesha only one has fruited, but the others are healthy.

Public Clove Nurseries.—About 10,700 seedling trees have been issued during the year, namely:—

Makondeni	...	4,000
Mkanjuni	...	4,000
Fufuni	...	2,500
Chem Chem	...	200
Total ...		10,700

Mpona, Matangatwani, and possibly part of Minyeneni Nurseries will be ready in the big rains, while another 5,000 plants have been laid down at Mkanjuni. The costs of this work are appended.

The Copra Industry.—The Hon. Director of Agriculture held meetings at all three stations on September 9th-10th with a view to decreasing costs of production and to improving the quality. The Agricultural Officer subsequently paid several visits to the districts, talked with individuals concerned, and also held further meetings at Wete and Chake Chake. It is felt that a certain amount has been done towards reducing costs, though prices are not yet down to Zanzibar level, but the quality still seems as bad as ever and probably will not improve until the new decree comes into force.

An exhibition kiln of about 400 nuts capacity has been built at Matangatwani, but no demonstration has yet been given. The main expense in the industry here is caused by the dogged determination to work unprofitable trees; hardly a single owner would hesitate to pay a man two pice to go up a tree with only one nut on it.

Propaganda is urgently needed in this direction, but at present Agricultural Officers have little time for such work.

General.—In comparison with the last three years the rainfall was extremely low, 64.63 inches at Wete, of which 38.02 inches fell before the end of April, May being a far drier month than usual. Besides causing great loss in the rice crops, the drought shrivelled up many clove buds, and those that matured were of very small size on the whole. Yields were 50-75 per cent less than was estimated in May.

As a result money became extremely short by the end of the year, and the shortage was accentuated by the sudden drop in clove prices.

In January and February many people who had made profits over cloves went with a splash into coconuts, but by the middle of the year prices were right down, and heavy losses were incurred.

A sure sign of the general poverty is the extensive planting of leguminous pulse crops on the 1931 rice plots.

GOVERNMENT PLANTATIONS, EXPENDITURE AND REVENUE STATEMENT.

Shamba.	Revenue.		Expenditure Under Personal Emolument Charges.					
			Normal.		Other.		Total.	
			Rs.	Cts.	Rs.	Cts.	Rs.	Cts.
Matangatwani ...	661	...	327	74	1,610	48	1,938	22
Makondeni ...	†82	...	1,207	36	914	19	2,121	55
Mpona ...	57	...	386	61	533	46	920	07
Wete Town Group ...	†811	75	152	...	487	43	639	43
Chem Chem ...	...	...	...	...	523	06	523	06
Tundaua ...	†2,963	78	4,864	47	257	75	5,122	22
Wesha ...	†1,033	...	961	94	988	49	1,950	43
Mkanjuni ...	...	...	...	...	916	26	916	26
Fufuni ...	†694	...	6,117	65	479	58	6,597	23
Kungeni ...	80	...	131	25	...	...	131	25
Kisaoni, Wete ...	5	...	17	25	...	...	17	25
Makue ...	15	...	140	...	...	...	140	...
Finga ...	4	...	2	...	...	...	2	...
Chake Town ...	90	...	12	...	...	...	12	...
Kizimbani ...	245	13	18	50	...	...	18	50
Chwaka ...	1,556	...	1,116	11	...	...	1,116	11
Kiyuyu ...	4	...	2	...	79	20	81	20
Kichanjani ...	157	50	25	...	...	...	25	...
Michenzani ...	80	30	20	...	...	...	20	...
Kwamacho ...	408	38	226	75	...	...	226	75
Mkoani ...	124	75	12	...	...	...	12	...
Daya ...	...	...	9	...	...	...	9	...
Kisaoni ...	...	...	9	...	...	...	9	...
Tibirizi ...	...	...	10	...	...	...	10	...
Minyeneni ...	...	...	...	...	365	64	365	64
Totals ...	9,072	59	15,768	63	7,155	54	22,924	17

†Produce from these shambas awaiting sale amounts to	Rs.
1,033 frasslas Cloves @ Rs. 13/-	... 13,500
238 frasslas Stems @ Rs. 2/-	... 500
25,000 Coconuts say	... 600
‡Balance of clove rent outstanding	... 190
Additional revenue anticipated	... 14,790

N.B.—Under the heading "other expenditure" nurseries, experimental work, boat boys, caretakers, and town gardeners are included, none of which are a fair charge against the normal working.

EXPENDITURE UNDER "OTHER CHARGES" (GOVT. PLANTATIONS).

	Rs.	Cts.
Incidental Expenses ...	4	50
Repairs of Plantation Houses ...	290	90
Purchase of Seeds ...	9	50
Materials and Tools ...	149	91
Travelling Allowances ...	88	11
Transport Allowances ...	120	00
Transport Expenses ...	317	40
Copra Factories ...	26	43
Fuel and Oil, Motor Vehicles ...	—	—
Total Rs.	1,006	75

The position may therefore be summed up as follows:—

		Rs.	Cts.
Revenue (actual and anticipated)	...	23,862	59
Normal working Expenditure	...	16,775	38
Profit	...	7,087	21
The profit is just not sufficient to cover the other expenditure of	...	7,155	54

Revenue already obtained is made up as follows:—

		Rs.	Cts.
Cloves	...	1,534	31
Coconuts	...	7,114	78
Miscellaneous	...	423	50
Total	Rs.	9,072	59

COSTS OF CLOVE NURSERIES AND EXPERIMENTAL WORK, 1930.

CLOVE NURSERIES.

Shamba.		Labour.		Supervision.		Total.
		Rs.	Cts.	Rs.	Cts.	Rs. Cts.
Tundaua	...	28	75	13	00	41 75
Mkanjuni	...	616	26	300	00	916 26
Matangatwani	...	401	78	196	00	597 78
Mpona	...	363	46	170	00	533 46
Makondeni	...	245	81	119	00	364 81
Chem Chem	...	176	15	88	00	264 15
Fufuni	...	232	82	113	00	345 82
Minyeneni	...	365	64	Nil*		365 64
Total	...	2,430	67	999	00	3,429 67

* Supervision by Assistant Sub-Inspector.

EXPERIMENTAL WORK.

Shamba.		Labour.		Supervision.		Total.
		Rs.	Cts.	Rs.	Cts.	Rs. Cts.
* Makondeni	...	369	38	180	00	549 38
* Matangatwani	...	1,085	48	525	00	1,610 48
† Chem Chem	...	164	21	80	00	244 21
* Weshu	...	215	49	101	00	316 49
§ Fufuni	...	88	76	45	00	133 76
‡ Kiyuyu	...	51	20	25	00	79 20
Total	...	1,977	52	956	00	2,933 52

* See detailed accounts attached.

† Budded citrus and trees for town planning.

§ Clove regeneration plot—2 acres.

‡ Nursery for *Hydnocarpus Wightiana*.

		Rs.	Cts.
Total :—Nurseries	...	3,429	67
Experimental	...	2,933	52
Total	Rs.	6,363	19

DETAILS OF LABOUR ON EXPERIMENTAL STATIONS.

CLOVE REGENERATION.

Matangawani.

	Rs.	Cts.
To Felling 155 clove trees, clearing and burning stumps of 355 clove trees and 13 coconuts	...	947 48
„ Hoeing and levelling	...	105 95
„ Lining	...	13 00
„ Holing	...	15 97
„ Liming (2 acres only)	...	3 08

Total Labour Rs. 1,085 48

To Supervision	...	525 00
„ Cost of lime (20 bags)	...	15 00

Total Costs for year Rs. 1,625 48

To felling 200 clove trees and 13 coconuts in 1928	...	146 64
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Total costs to date Rs. 1,772 12

Makondeni.

To Small <i>Cacao</i> plot, planting and upkeep (abandoned in June)...	58 17
„ <i>Hydnocarpus Anthelmintica</i> plot, upkeep 59 trees	48 53
„ <i>Taraktogenos Kurzii</i> plot, preparation, planting and upkeep 32 trees	116 15
„ Sikafu plantings, 13 various citrus, 3 <i>Taraktogenos Kurzii</i> 5 <i>Coffea</i> , 2 Avocados, small pineapple plot	73 69
„ Tobacco plot (failed)	7 25
„ <i>Hydnocarpus Wightiana</i> nursery	36 46
„ Clove manurial experiments—planting one acre and manuring, manuring 4 plots 8 year old trees	26 13
„ Clipping clove hedges and weighing produce	3 00

Rs. 369 38

„ Supervision	...	180 00
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Total Rs. 549 38

Wesha.

To Maintenance of one acre <i>Coffea robusta</i>	...	104 81
„ Maintenance of one acre <i>Taraktogenos Kurzii</i>	...	88 18
„ Citrus stock nursery	...	22 50
„ Supervision	...	101 00

Total Rs. 316 49

J. R. P. SOPER,

Agricultural Officer.

Wete, 26th January, 1931.

REPORT ON GOVERNMENT PLANTATIONS, 1930.

Staff.—During the year under review the Manager of Plantations was required to act as Assistant Director from 7th February to 2nd March, and as Produce Inspector from 1st March to 4th April. This was unfortunate since planting operations were in progress at the time.

Sheikh Mohammed bin Seif bin Salim el-Busaidi, took charge during the absence of the Manager of Plantations on the above occasions.

Some of the Overseers are now, after two years, showing signs of appreciating the reason for the rendering of detailed reports and costs and their bearing on economic working. But, as would be expected, it so often happens that the man whose reports and accounts are kept with care is not so successful in obtaining the utmost of value from his labour and assistants, whereas another, who can neither read nor write, has excellent control over his men and obtains good and cheap work in the field. The scheme of providing for the future by training Arab pupils and pupil gangers is being continued, but it would appear that a more efficient teacher might be obtained. It must be borne in mind that during clove harvest time all teaching must be held in abeyance, since, with our limited staff, all hands are required during the picking season. With regard to the efficiency shown by these young fellows, "Many are called but few are chosen", sums up the situation. And, if a youth shows extra promise of intelligence, the tendency is for him to look for transfer to a Department where the pay and prospects are better, or to an office job which will enable him to live in town.

Finance.—The Revenue for the year amounted to Rs. 2,14,068-43.

The total expenditure amounted to Rs. 1,81,078-20, which sum includes Rs. 17,040-15 spent on Experimental and Nursery work.

A summary of the true result of the year's working may be shown thus:—

	Rs.	Cts.
Revenue Government Plantations	2,14,068	43
Expenditure Government Plantations	1,81,078	20
Less Expenditure on Experimental and Nursery work	17,040	15
Total Rs.	1,64,038	05

Surplus of Revenue over Expenditure therefore amounts to Rs. 50,030-38. This result certainly makes a very poor showing when compared with previous years but the reason is not far to seek when the fall in the price of copra and the exceptionally poor clove harvest are taken into consideration.

General.—The usual routine of maintenance was carried on but development and gapping were seriously hampered by the weather.

In this country one has to fit in the preparation of the ground for planting between the end of the clove harvest, during which time all able bodied people are heavily engaged, and the beginning of the "Masika".

In 1930 the clove harvest carried on until the end of January and the rains started in February; thus the clearing, lining and holing were being done during weather more suitable for planting. Then in April, when there should have been at least another month of planting, drought set in which lasted for four months. Thus, the survivors of the 1930 planting programme are few and far between, and have had such a struggle for existence that they are hardly likely to become economic propositions.

During those months of drought the upkeep of firebelts was of great importance; these had to be of greater width than usual owing to the very high winds. In spite of all care several fires entered the plantations when burning fragments were blown many feet in advance of the flames. Little damage was however done, largely due to the presence and help of our squatters, who by such timely assistance earn their place on the land.

The Experimental areas at Kinaoni and Dunga were maintained.

13,405 seeds of *Hydnocarpus Wightiana* were planted out at Kitumba, Miwani, Kitope and Nyanjale. The germination was very poor, being only $3\frac{1}{2}$ per cent. Land was partially cleared at Miwani in readiness to plant out the survivors from the two first named nurseries and can soon be prepared for those from the last two.

Thirty pounds of seed were sent to Pemba and the Agricultural Officer's report deals with the result.

Cloves.—The harvest was a very poor one. Picking started in July and ended in October. The Government plantations produced Frasilas 2,217 which realised Rs. 32,680 at an average price of Rs. 15-26 for Zanzibar cloves and Rs. 13-27 for Pemba cloves. The average output per tree in Zanzibar was lb. 0.43, and between four and nine pice per pishi were paid for picking.

1,23,526 lbs of clove leaves (55 tons) were swept up at Selem, baled and sent to London in 888 bales.

Coconuts.—Costs were kept and rendered. The coconut crops on the five operated plantations were as follows.

Figures for 1928 and 1929 are given for comparative purposes.

	No. of palms.	1928.	No. of Nuts. 1929.	1930.	Average per palm.
Selem	14,300	3,94,827	4,94,397	4,82,077	34
Mahonda	2,040	56,700	86,404	1,28,616	63
Mtoni	19,400	5,09,466	5,62,966	6,18,396	32
Chukwani	8,000	2,19,124	2,84,291	2,62,933	33
Tundaua	10,595	1,36,252	leased	*1,25,367	12

*For last three pickings.

19,051 frasilas of copra were made (i.e. 298 tons) which fetched prices as follows:—

Sun and Smokeless kiln dried	Rs. 2-9-0 to Rs. 4-0-0
Smoke dried	Rs. 2-6-0 to Rs. 3-10-0

Owing to a decision to increase the number of areas worked departmentally 13 kilns, of the underground smokeless type, were built or are in course of construction on the Kizimbani Estate. This entailed the erection of stores and barbed wire enclosures on several sites in addition to the building of the kilns.

The question of the reduction in production costs has been dealt with in another Report.

Many of our licensees surrendered the right to pick the nuts of the 4th gathering owing to the fall in the price of copra, even though they had only to pay 10 per cent of the total amount of the lease.

Deaths amongst bearing or mature stock were as follows. The huge harvest and drought are responsible for the figures. If the rains had not fallen early and plentifully the mortality would have been much greater.

Cloves	...	389
Coconuts	...	377

During the year 25,007 clove seedlings were distributed free to the public, and 11,935 coconut seedlings were sold.

These figures were influenced by unpropitious weather.

Surveys.—The survey work was carried out as follows:—

Acres Surveyed	...	1,202
Acres Demarcated	...	376
Acres Subdivided	...	1,069
Total area		2,647 acres.

GRAHAM TOMSON,
Manager of Plantations.

REPORT OF THE GOVERNMENT CHEMICAL LABORATORY

FOR THE YEAR 1930.

1. STAFF.

The Assistant Government Chemist acted as Assistant Director of Agriculture until 6th February.

He was on leave from 7th February to 10th September. During his absence the Laboratory was supervised by the Director of Agriculture and Government Chemist, and routine work was carried out efficiently by Laboratory Assistant, Mr. A. G. Kark.

2. EQUIPMENT.

The stock of apparatus and chemicals was slightly extended, the most important addition to the permanent equipment being a polarimeter.

3. CHEMICAL WORK.

The number of samples dealt with was twice that in 1929, the increase being due to a change in the policy of sampling export cloves. This matter is discussed later.

The total number of samples received was 775, compared with 387 in 1929.

These samples were received from Departments of the Government and other sources as shown in Table I.

TABLE I.

Department.	1st quarter.	2nd quarter.	3rd quarter.	4th quarter.	Total
Agriculture	26	39	273	278	616
Health	22	18	20	19	79
Police	9	22	11	14	56
Customs	4	6	2	2	14
Other Departments	—	—	—	1	1
Total Government	61	85	306	314	766
Private samples	3	2	3	1	9
Total	64	87	309	315	775

A total of Rs. 127-50 cts. was received by Government in fees for analyses carried out for private firms or individuals.

The details of the Government samples are as follows:—

Agriculture.—Cloves (export), 506; cloves (Clove Growers' Association), 47; cloves (experimental drying), 7; clove leaves, 39; copra, 12; soils, 4; exhausted cloves, 1; Total, 616.

Health.—Soda water, 52; cattle dip, 13; toxicological exhibits, 7; medicines, 5; drinking water, 2; Total, 79.

Police.—Spirits and other liquids for alcohol, 12; exhibits for opium, 19; exhibits for bhang, 20; essences and perfumes, 3; medicines, 1; other exhibits, 1; Total, 56.

Customs.—Spirits, 2; essences, 3; perfumes, 5; medicines, 4; Total, 14.

Other Departments.—Audit, 1.

NOTES.

(i) *Agriculture*.—As mentioned above a change was made in the policy of sampling export cloves. Formerly the Inspector submitted for analysis only those samples the quality of which seemed doubtful, and the majority of those examined were found to be below export standard. During the latter half of the year it was decided to analyse samples from a larger proportion of consignments presented for export, in order to reduce to a minimum the chance of a consignment not up to standard leaving the country. In consequence the majority of samples analysed have passed. The new policy has resulted in a further noticeable improvement in exported cloves in respect of dryness and freedom from foreign matter.

Of the 506 samples of cloves taken by the Produce Inspector from consignments presented for export, 37 were examined for moisture only, 38 for foreign matter only, and 431 for both moisture and foreign matter. Of the 468 samples examined for moisture, 434 were passed, the distribution of moisture-content being as follows:—Passed; moisture under 10 per cent, 3 samples (the lowest figure being 7.2 per cent); 10.1—11 per cent, 6; 11.1—12 per cent, 20; 12.1—13 per cent, 54; 13.1—14 per cent, 107; 14.1—15 per cent, 154; 15.1—16 per cent, 90; the average moisture content of the 434 samples passed was 14.1 per cent; Rejected; 16.1—17 per cent, 23; 17.1—18 per cent, 8; 18.1—19 per cent, 2; 19.1—20 per cent, 1, the highest figure being 19.2 per cent. Of the 469 samples examined for foreign matter, 443 were passed, the distribution of foreign matter content being as follows:—Passed; foreign matter 1—2 per cent, 27 samples; 2.1—3 per cent, 135; 3.1—4 per cent, 200; 4.1—5 per cent, 81; the average foreign matter content of the 443 samples passed was 3.3 per cent; Rejected; 5.1—6 per cent, 13; 6.1—7 per cent, 8; 7.1—8 per cent, 3; 8.1—9 per cent, 1; 9.1—10 per cent, 1.

Consignments of cloves brought into the Clove Growers' Association for storage were sampled to guard against the acceptance without remark of wet cloves on which there would be excessive loss by evaporation during storage. Of the 47 samples taken for this purpose, 24 were examined for moisture only and 23 for both moisture and foreign matter. Of the 47 samples examined for moisture, 34 contained 16 per cent or less, and the remainder contained excessive moisture as follows:—16.1—17 per cent, 3; 17.1—18 per cent, 2; 18.1—19 per cent, 1; 19.1—20 per cent, 4; over 20 per cent, 3; the highest figure being 24.0 per cent. All 23 samples examined for foreign matter contained less than 5 per cent.

The investigation into the leaf fall from clove trees which was conducted throughout 1929 was continued in 1930. Table II shows the weight of air-dried clove leaves collected monthly from each of the three one-acre plots, the percentage oil content, and the total weight of oil obtainable. On comparing the figures with those given in the 1929 Report (p. 33) it is apparent that there has been a general falling off in quantity of leaves. The experiment will be continued in 1931 in an endeavour to correlate the data with climatic and other factors.

TABLE II.

Month.	Weight of leaves, in lbs. (air dried).			Total.	Percentage of Oil by weight.			Weight of Clove-leaf Oil in lbs.			
	Blk. 1	Blk. 2	Blk. 3		Blk. 1	Blk. 2	Blk. 3	Blk. 1	Blk. 2	Blk. 3	Total.
...	304	622	1,754	2,680	4.30	4.45	3.80	13.10	27.70	66.60	107.40
January	258	508	833	1,599	3.15	2.95	3.05	8.15	15.00	25.40	48.55
February	204	327	389	920	3.50	4.30	3.05	7.15	14.05	11.90	33.10
March	130	261	596	987	3.35	3.35	4.00	4.35	8.75	23.85	36.95
April	458	642	416	1,516	3.35	3.70	4.10	15.35	23.75	17.05	56.15
May	572	845	757	2,174	4.00	4.00	4.10	22.90	33.80	31.05	87.75
June	719	807	1,282	2,808	4.20	4.20	3.70	30.20	33.90	47.40	111.50
July	707	838	1,581	3,126	3.90	4.00	3.80	27.60	33.50	60.10	121.20
August	333	214	521	1,068	3.70	4.10	3.80	12.30	8.80	19.80	40.90
September	702	545	504	1,751	4.50	4.60	3.80	31.60	25.10	19.20	75.90
October	181	336	849	1,366	4.00	4.10	3.70	7.20	13.80	31.40	52.40
November	213	349	353	915	4.30	4.60	3.55	9.15	16.05	12.50	37.70
December	...	...	...	...	...	...	...	...	...	...	...
Totals	4,781	6,294	9,835	20,910	...	...	...	189.05	254.20	366.25	809.50
Averages	398	524	819	1,742	3.85	4.03	3.70	15.75	21.18	30.52	67.46

Experiments on the drying of cloves by artificial heat were carried out at Selem Plantation in September. Various simple types of copra-drying kilns were used, the cloves being spread on grass mats or gunny-bagging over a layer of heated sand. It was found that to obtain the best product the kiln should be capable of being heated fairly evenly over its whole surface, the cloves should be spread at not more than 2 lbs. per square foot of mat, the temperature should not be allowed to rise above 65°C. in the layer of cloves, and the cloves should be turned over at regular and frequent intervals. The cloves so prepared were bright and sound and superior in appearance to cloves dried on the ordinary cement floor in the sun. Analysis showed that no appreciable loss of oil had occurred. The drying process occupied not more than 18 hours if conducted continuously. An intelligent native can be trained to supervise the drying quite satisfactorily, and it appears that a practical method is readily available by which plantation owners can produce first quality cloves even in wet weather, and by which merchants can bring damp cloves up to export standard.

(ii) *Health*.—Routine examinations of soda water were continued; in general the content of copper and lead was satisfactorily low, the copper only occasionally exceeding one-fiftieth of one grain per gallon and lead being negligible. Advice was given in one case in which the copper amounted to one-fifth of one grain per gallon, and the contamination was subsequently reduced to one-seventieth of one grain per gallon.

That the analytical control of the liquid in cattle dipping tanks is necessary is shown by the fact that of 13 samples only three were of correct arsenical strength, eight were weak (only seriously so in two cases, in which the deficiency was 17.5 per cent and 22.5 per cent respectively), and one was 16 per cent above strength.

Of the seven toxicological exhibits, six—five stomachs and one urine—were in connexion with deaths which occurred in 1929, mention of which was made in the Report for that year. No poisonous substance was detected. The other exhibit was a vomit suspected to contain copper; no copper salts were present.

No drugs prohibited under the Dangerous Drugs Decree were found in the five medicines examined.

(iii) *Police*.—Alcohol was detected and estimated in all 12 suspected liquors submitted by the Police Department. Of the 19 exhibits for opium, 17 contained or consisted of that substance. Opium was detected also in two exhibits which were submitted for and contained bhang. Exhibits for bhang consisted of actual bhang, smoking mixtures, pipes, etc. Bhang was detected in 16 cases out of 20. Alcohol was detected and estimated in three perfumes. One exhibit of native medicine was found to be harmless. *Datura* leaves were identified in an exhibit of native liquor.

(iv) *Customs*.—One sample of methylated spirit was found to be non-potable, the denaturant containing pyridine. Four imported medicines were found to be free from dangerous drugs. Alcohol was detected and estimated in one liqueur, three essences and four perfumes; one perfume was non-alcoholic.

(v) *Other Departments*.—A number of bronze coins (pice) were weighed at the request of the Auditor.

During the year 105 written reports were sent out to Departments other than the Agricultural and to private firms. This number does not include certificates of the result of analyses of samples taken under the Agricultural Produce (Export) Decree.

Closer touch has been established between this Laboratory and the Bacteriological and Pathological Laboratory of the Health Department, and it has been arranged that chemical standard solutions required by that Laboratory shall be prepared and standardised here.

4. MISCELLANEOUS WORK.

The Assistant Government Chemist acted as Chairman of a Committee appointed by Government to arrange an exhibit for the Kenya Royal Agricultural and Horticultural Society's Show to be held at Nairobi in January, 1931.

Earlier in the year the Laboratory staff was called upon to assist in preparing and packing an exhibit for the International Exhibition at Antwerp.

L. W. RAYMOND.

Assistant Government Chemist.

Zanzibar, 26th January, 1931.

TABLE I.

Assistance to Clove Growers.

	1929.		1930.		Total.
	Zanzibar.	Pemba.	Zanzibar.	Pemba.	
(a) Loans for Harvesting.					
Number of Loans	...	1,198	39	135	174
Amount of Loans	...	97,132	18,660	19,800	38,460
(b) Free Storage of Cloves.					
Number of Advances	...	384	107	275	382
Amount of Advances	...	1,90,324	1,94,322	2,79,703	4,74,025
(c) Produce sold through the C.G.A.					
	Cloves.	Stems.	Cloves.	Stems.	Copra.
	Fras. lbs.	Fras lbs.	Fras. lbs.	Fras. lbs.	Fras. lbs.
Zanzibar Produce	16,099 05	1,118 16	10,370 09	1,392 19	— —
Pemba Produce	5,799 09		25,568 20		354 11
Totals	21,898 14	1,118 16	35,938 29	1,392 19	354 11

TABLE II.

Clove Growers' Association Balance Sheet for the year ending 31st of December, 1930.

LIABILITIES.		ASSETS.	
	Rs. Cts.		Rs. Cts.
Advance by Treasury	... 5,90,823 13	Cash in Post Office in Pemba	... 1,388 14
Amount due to Members	... 2,894 82	Cash in hand in Pemba	... 458 23
Depreciation Lorries	... 9,554 05	Cash at Bank	... 1,09,065 20
Excess of Assets over Liabilities	... 685 71	Advance due by Members	... 4,51,011 39
		Charges due by Members	... 5,987 00
		Harvesting Loans outstanding	... 12,363 70
		Value of three lorries	... 23,684 05
	Total Rs. 6,03,957 71		Total Rs. 6,03,957 71

TABLE III.

Clove deliveries compared with former seasons
(in frascas of 35 lbs.)

		1924/25.			1925/26.		
Month.		Zanzibar.	Pemba.	Total.	Zanzibar.	Pemba.	Total.
July	...	341	2,721	3,062	5,596	15,445	21,041
August	...	2,235	26,409	28,644	9,366	40,711	50,077
September	...	23,358	88,072	111,430	42,162	88,069	130,231
October	...	43,968	90,716	134,684	67,918	80,357	148,275
November	...	43,274	74,445	117,719	38,215	44,699	82,914
December	...	54,090	51,365	105,455	27,531	48,615	76,146
January	...	43,641	49,239	92,880	10,759	5,852	16,611
February	...	11,264	41,348	52,612	5,814	20,267	26,081
March	...	9,439	32,107	41,546	2,322	16,617	18,939
April	...	2,933	23,259	26,192	1,291	13,647	14,938
May	...	4,304	19,222	23,526	2,186	10,639	12,825
June	...	2,105	21,587	23,692	6,032	7,704	13,736
Total.	...	240,952	520,490	761,442	219,192	392,622	611,814

		1926/27.			1927/28.		
Month.		Zanzibar.	Pemba.	Total.	Zanzibar.	Pemba.	Total.
July	...	19,796	11,352	31,148	3,228	16,907	20,135
August	...	16,357	15,445	31,802	10,138	16,243	26,381
September	...	5,370	30,610	35,980	8,165	19,493	27,658
October	...	5,827	39,277	45,104	18,255	45,755	64,010
November	...	3,371	39,933	43,304	21,096	78,121	99,217
December	...	17,162	56,803	73,965	19,937	76,253	96,190
January	...	62,506	102,327	164,833	53,101	90,984	144,085
February	...	41,465	91,589	133,054	33,284	61,132	94,416
March	...	18,063	54,888	72,951	11,242	30,956	42,198
April	...	5,558	32,590	38,348	6,211	29,713	35,924
May	...	6,080	33,095	39,175	2,453	14,719	17,172
June	...	2,088	21,277	23,365	3,260	20,106	23,366
Total.	...	203,843	529,186	733,029	190,370	500,382	690,752

		1928/29.			1929/30.		
Month.		Zanzibar.	Pemba.	Total.	Zanzibar.	Pemba.	Total.
July	...	4,252	13,336	17,588	3,716	3,818	7,534
August	...	12,470	21,224	33,694	26,193	43,900	70,093
September	...	10,505	20,276	30,781	34,226	97,040	131,266
October	...	10,655	20,544	31,199	48,162	101,478	149,640
November	...	3,538	11,808	15,346	57,200	83,513	140,713
December	...	6,555	12,276	18,831	46,373	68,428	114,801
January	...	14,185	11,708	25,893	51,754	50,560	102,314
February	...	9,260	5,248	14,508	36,329	36,965	73,294
March	...	6,735	2,436	9,171	22,337	27,058	49,395
April	...	6,092	1,776	7,868	40,859	43,863	84,722
May	...	5,990	3,828	9,818	16,082	24,060	40,142
June	...	6,065	1,280	7,345	9,143	16,943	26,086
Total.	...	96,302	125,740	222,042	392,374	597,626	990,000

Figures for 1928/29 and 1929/30 are supplied by the Comptroller of Customs. As all deliveries of Zanzibar cloves are not necessarily passed through Customs, the figures for Zanzibar are arrived at from various sources and are to be regarded as approximate only.

TABLE IV.

Protectorate clove crops for the past 34 seasons:—

Season.	Zanzibar.	Pemba.	Total.
	Fras.	Fras.	Fras.
1896/97	86,000	224,000	310,000
1897/98	48,000	157,000	205,000
1898/99	145,000	466,000	611,000
1899/1900	64,000	221,000	285,000
1900/01	37,000	200,000	237,000
1901/02	44,000	323,000	367,000
1902/03	172,000	252,000	424,000
1903/04	27,000	99,000	126,000
1904/05	81,000	654,000	735,000
1905/06	178,435	129,735	308,170
1906/07	63,004	203,496	266,500
1907/08	213,662	541,993	755,655
1908/09	165,727	449,691	615,418
1909/10	109,678	300,047	409,725
1910/11	52,100	139,307	191,407
1911/12	216,507	582,153	798,660
1912/13	31,018	104,368	135,386
1913/14	145,586	638,091	783,680
1914/15	194,920	331,389	526,309
1915/16	141,641	655,116	796,757
1916/17	208,716	302,919	511,635
1917/18	63,958	234,239	298,197
1918/19	259,273	565,229	824,502
1919/20	93,847	168,703	262,550
1920/21	231,831	316,446	548,277
1921/22	65,819	200,983	266,802
1922/23	291,417	690,498	981,915
1923/24	75,027	236,767	311,794
1924/25	240,952	520,490	761,442
1925/26	219,192	392,622	611,814
1926/27	203,843	529,186	733,029
1927/28	190,370	500,382	690,752
1928/29	74,828	125,740	200,568
1929/30	*280,296	*597,626	877,922
Average 34 seasons	138,695	354,212	493,202

* These figures do not include 12,670 frassas from Pemba and 38,351 frassas from Zanzibar which were delivered to the Clove Growers' Association and which bring the total for the season to 928,943 frassas.

TABLE V.

Average prices of cloves during 1929/30, month by month, in rupees, compared with the five previous seasons:

Month.	1924/25.			1925/26.		
	Zanzibar.	Pemba.	Stems.	Zanzibar.	Pemba.	Stems.
July	24.83	22.58	6.31	18.34	17.72	5.17
August	21.28	18.97	4.40	18.46	17.80	4.64
September	18.83	17.07	4.30	17.35	16.61	4.36
October	20.79	18.91	5.55	17.05	16.73	4.21
November	21.22	20.07	5.62	15.12	16.11	3.85
December	19.75	19.41	5.30	16.35	17.65	4.38
January	18.00	18.16	4.81	16.72	17.61	4.24
February	17.66	17.42	4.34	16.61	17.17	3.99
March	17.28	17.62	4.62	16.98	16.45	3.91
April	16.03	16.12	4.24	16.37	15.97	4.22
May	15.37	16.14	4.34	16.31	16.16	4.19
June	16.22	16.57	4.70	16.32	16.34	3.08
Mean price	18.94	18.25	4.88	16.83	16.86	4.19

Month.	1926/27.			1927/28.		
	Zanzibar.	Pemba.	Stems.	Zanzibar.	Pemba.	Stems.
July	14.36	14.09	3.72	12.31	12.35	2.89
August	14.15	14.02	3.48	12.58	12.48	2.79
September	14.27	14.29	3.63	12.55	12.55	2.72
October	14.92	15.03	3.62	11.67	11.67	2.76
November	14.60	14.54	3.96	11.88	11.25	2.61
December	14.36	14.35	3.22	11.40	11.13	2.30
January	12.59	12.60	2.91	11.99	11.79	3.90
February	12.34	12.55	2.98	12.34	12.14	4.00
March	13.32	13.46	2.99	12.77	12.56	3.69
April	13.45	13.11	3.01	12.91	12.44	3.10
May	13.39	13.26	3.03	14.72	14.20	3.75
June	13.47	13.26	2.83	17.55	17.08	4.00
Mean price	13.77	13.71	3.28	12.85	12.64	3.21

Month.	1928/29.			1929/30.		
	Zanzibar.	Pemba.	Stems.	Zanzibar.	Pemba.	Stems.
July	22.49	23.61	4.49	23.37	22.37	4.26
August	21.10	21.25	4.59	19.30	16.32	4.03
September	22.08	21.93	4.63	16.50	15.50	5.16
October	25.04	24.89	6.11	17.81	16.87	3.89
November	28.92	28.29	6.15	16.26	15.46	3.85
December	27.61	27.76	6.02	15.56	14.94	3.60
January	30.98	30.64	6.65	14.74	14.20	3.17
February	30.47	30.85	6.89	15.50	15.12	3.18
March	33.91	33.04	6.75	18.72	18.65	3.81
April	31.14	30.19	6.95	21.91	21.83	4.95
May	32.08	31.65	5.49	20.96	20.68	4.44
June	31.95	31.68	5.37	20.01	19.84	3.85
Mean price	28.15	27.98	5.84	18.39	17.85	4.02

All the above prices are "duty paid".

TABLE VI.

Annual Clove Shipments from Pemba.

Year.	W E T I D I S T R I C T.					C H A K E - C H A K E D I S T R I C T.				M K O A N I D I S T R I C T.					Total P E M B A.	
	Wete.	Mtambwe.	Junguni.	Kipangani. (Matanga- twani)	Msuka.	District Total.	Chake.		Kiswani.	District Total.	Jamban- gome.	Mkoani.	Fufuni.	Kengeja.		District Total.
1914	Fs. 89,433	Fs. 13,786	Fs. 5,721	Fs. 8,666	Fs. 6,594	Fs. 1,23,200	Fs. 85,779	Fs. 23,550	Fs. 1,09,329	Fs. 45,043	Fs. 13,968	Fs. 16,947	Fs. 21,826	Fs. 91,804	Fs. 3,24,333	
1915	1,64,655	25,072	12,992	21,738	11,126	2,35,583	1,46,913	46,330	1,93,243	79,089	26,732	40,238	46,693	1,92,722	6,21,548	
1916	1,17,337	26,709	12,168	7,905	5,950	1,69,514	84,807	28,707	1,13,514	62,931	14,788	22,144	42,279	1,42,142	4,25,175	
1917	20,951	12,135	5,248	7,828	4,449	50,611	23,096	8,011	31,107	3,114	4,654	12,010	10,850	50,628	1,32,316	
1918	76,309	17,786	15,555	10,503	5,429	1,25,582	1,25,634	16,032	1,41,666	74,253	28,153	10,583	97,815	1,50,804	4,18,052	
1919	1,40,562	18,810	10,269	7,427	5,763	1,82,831	77,261	28,463	1,05,724	51,370	16,964	13,576	26,807	1,09,017	3,97,572	
1920	31,674	3,304	1,010	1,001	4,874	41,863	30,311	5,499	35,810	16,433	2,096	6,923	11,823	37,275	1,14,948	
1921	1,04,339	12,302	10,650	7,714	9,663	1,44,668	93,601	20,740	1,14,311	12,484	55,703	26,131	44,756	1,39,074	3,98,083	
1922	1,18,000	17,700	3,400	7,500	6,700	1,51,300	1,07,000	37,500	1,44,500	76,500	16,200	51,100	45,400	1,89,200	4,87,000	
1923	1,33,688	23,244	18,814	12,308	4,897	1,98,951	1,19,289	34,196	1,53,485	53,079	15,490	27,149	49,595	1,45,313	4,97,749	
1924	83,472	26,387	7,109	7,225	4,946	1,34,139	97,033	35,516	1,32,549	56,240	30,153	38,506	37,254	1,62,453	4,29,141	
1925	72,322	31,115	6,870	12,520	7,403	1,30,233	1,25,808	61,752	1,87,560	64,239	18,842	38,196	56,448	1,77,725	4,95,515	
1926	57,588	24,492	3,773	3,408	1,879	91,140	71,571	28,314	99,915	35,670	10,629	16,189	37,432	99,920	2,90,975	
1927	2,26,479	28,973	13,967	30,322	16,491	3,16,442	1,07,563	41,450	1,49,013	78,319	38,937	24,923	35,140	1,77,319	6,42,574	
1928	62,454	27,965	4,888	7,602	3,780	1,06,739	77,746	28,967	1,06,713	53,478	36,086	9,568	42,041	1,41,173	3,54,625	
1929	1,03,434	23,065	11,327	5,786	2,776	1,46,389	1,46,046	20,531	1,76,567	46,134	35,183	13,417	56,836	1,51,570	4,74,526	
1930	1,45,367	6,236	4,132	1,103	1,034	1,57,868	85,742	12,510	98,252	28,031	36,313	11,217	4,153	1,19,714	3,75,834	
Average 17 years.	1,03,067	20,299	8,699	9,409	6,103	1,47,579	94,422	28,709	1,23,134	50,375	23,583	21,965	38,067	1,33,991	4,04,705	

TABLE VII.

Export of Copra (Produced in the Protectorate) for the past 25 years
and average price per frasla of 35 lbs.

Year.	Fraslas.	Average for 6 years.	Average Price Rs. Cts.	Average 6 years. Rs. Cts.
1906	4,93,688		3 24	
1907	3,79,526		3 76	
1908	5,26,269		2 70	
1909	3,84,260		3 26	
1910	4,82,834		4 14	
1911	5,19,081		4 00	
		4,64,276		3 52
1912	4,76,366		4 19	
1913	4,74,368		4 85	
1914	5,38,112		3 87	
1915	5,49,472		3 73	
1916	3,50,238		4 72	
1917	4,21,316		7 10	
		4,68,312		4 75
1918	2,03,616		3 71	
*1919	9,07,329		5 31	
1920	5,38,595		6 59	
1921	4,99,907		6 60	
1922	4,69,878		5 33	
1923	6,01,110		4 82	
		5,36,739		5 38
1924	6,54,454		4 85	
1925	7,98,803		4 49	
1926	8,18,570		4 34	
1927	6,43,350		4 19	
1928	5,98,966		4 27	
1929	7,44,246		3 19	
		7,09,731		4 22
1930	8,19,081		2 90	

*Large holdover from previous year due to shortage of shipping.

TABLE VIII.

Monthly Average Price of Copra.

		1929			1930.		
		Rs.		£	Rs.		£
		per frasila.		per ton.	per frasila.		per ton.
		Rs. Cts.		£ s. d.	Rs. Cts.		£ s. d.
January	...	4	12	19 15 7	2	97	14 5 2
February	...	3	75	18 0 1	3	50	16 16 0
March	...	3	75	18 0 1	3	00	14 8 0
April	...	3	75	18 0 1	3	12	14 19 6
May	...	3	57	13 0 1	3	40	16 6 5
June	...	2	50	12 0 1	3	00	14 8 0
July	...	2	50	12 0 1	2	81	13 9 9
August	...	2	62	12 1 6	2	69	12 18 2
September	...	2	62	12 1 6	2	70	12 19 2
October	...	3	00	14 8 1	2	48	11 18 1
November	...	2	88	13 16 0	2	58	12 7 8
December	...	3	00	14 8 1	2	55	12 4 10
Yearly Average	...	3	19	15 11 10	2	90	13 18 5

TABLE IX.

DEPARTMENT OF AGRICULTURE.

Revenue and Expenditure, 1930.

Revenue.

Government Plantations.

		Rs. Cts.	Rs. Cts.
Cloves	...	37,653	61
Coconuts	...	1,73,020	86
Miscellaneous	...	1,987	96
Rent of Leased Plantations	...	1,406	00
			2,14,068 43

Fees of Court, etc.

Analysis	...	127	50
Clove Inspection	...	8,164	03
			8,291 53
Total Rs.		2,22,359	96

Expenditure.

SUB-HEAD	A.		B.		C.		D.	
	Administration.		Chemical.		Plantations.		Gardens.	
	Rs.	Cts.	Rs.	Cts.	Rs.	Cts.	Rs.	Cts.
Personal Emoluments ...	1,06,098	32	12,569	28	44,693	41	6,437	17
Labour for produce inspection ...	2,981	82	—	—	—	—	—	—
Labour for clove picking and drying ...	—	—	—	—	7,468	74	—	—
Labour for coconut gathering ...	—	—	—	—	10,402	37	—	—
Labour for cultivation of plantations ...	—	—	—	—	78,789	04	—	—
Labour for copra factories	—	—	—	—	11,621	29	—	—
Labour for gardens and open spaces ...	—	—	—	—	—	—	8,644	99
Uniforms ...	293	25	—	—	12	76	—	—
Incidental Expenses ...	741	47	50	56	33	71	8	07
Passages ...	6,129	89	2,443	72	133	00	43	00
Materials and tools ...	683	20	—	—	7,782	70	822	20
Travelling Allowances ...	2,744	43	—	—	123	86	—	—
Transport Allowances ...	1,404	33	—	—	110	00	—	—
Transport Expenses ...	1,429	13	33	34	9,773	13	2	50
Light and Power ...	184	12	—	—	—	—	—	—
Fuel and oil for motor vehicles ...	816	20	—	—	1,009	85	—	—
Repairs to motor vehicles and bicycles ...	284	49	—	—	—	—	—	—
Chemical apparatus and books ...	—	—	664	91	—	—	—	—
Purchase of seeds ...	—	—	—	—	121	35	350	97
Light and Power for Victoria Garden Hall ...	—	—	—	—	—	—	93	70
Repairs to plantation houses	—	—	—	—	4,073	23	—	—
Copra factories, erection and repairs ...	—	—	—	—	3,951	09	—	—
Repairs of motor vehicles	—	—	—	—	418	20	—	—
Surveys of Government Plantations ...	—	—	—	—	58	31	—	—
Total Rs. ...	1,23,790	65	15,761	81	1,80,676	04	16,402	60

Special Expenditure.

SUB-HEAD	A.		B.		C.		D.	
	Administration.		Chemical.		Plantations.		Gardens.	
	Rs.	Cts.	Rs.	Cts.	Rs.	Cts.	Rs.	Cts.
Motor car ...	2,784	90	—	—	—	—	—	—
Bonus for planting young trees ...	486	00	—	—	—	—	—	—
Transport Expenses of Colonial Office Agricultural Advisor ...	745	50	—	—	—	—	—	—
Polarimeter ...	—	—	456	77	—	—	—	—
Typewriter ...	—	—	293	17	—	—	—	—
8 Bicycles ...	—	—	—	—	402	16	—	—
Total ...	4,016	40	749	94	402	16	—	—
Grand Total ...	1,27,807	05	16,511	75	1,81,078	20	16,402	60

TABLE X.

Comparison of actual revenue and expenditure on the Government plantations year by year:—

Y ^{EAR} .	REVENUE.			EXPENDITURE.				
	Cloves.	Coconuts.	Sundry.	Total.	Personel emoluments.	Cultivation.	Clove harvest.	Sundry.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1910	35,636	33,009	36,289	1,04,934	10,932	41,839	6,081	8,736
1911	1,01,313	41,576	83,604	1,76,493	9,362	54,780	28,366	10,127
1912	1,63,042	60,443	90,988	2,54,473	14,684	61,238	29,160	15,809
1913	1,85,185	72,771	29,053	2,87,009	17,962	62,554	36,391	15,643
1914	67,600	79,745	29,819	1,75,563	32,159	59,603	36,309	12,577
1915	1,77,977	74,964	25,800	2,78,741	41,660	65,222	55,439	5,785
1916	1,66,391	74,771	21,039	2,62,201	44,220	70,485	63,146	6,878
1917	2,50,348	1,01,511	16,321	3,68,180	41,492	79,149	23,535	1,51,120
1918	2,13,030	1,19,606	18,263	3,50,899	51,643	90,787	63,404	12,414
1919	2,08,491	1,27,650	15,708	3,51,849	55,879	1,15,741	37,426	11,229
1920	95,524	1,57,085	9,900	2,62,509	51,777	1,24,607	35,873	15,080
1921	3,61,736	1,47,999	18,456	5,28,191	65,410	1,44,979	98,434	21,981
1922	1,19,925	1,17,195	33,211	2,76,631	75,021	1,55,189	91,386	21,822
1923	4,28,266	1,82,159	13,642	6,24,067	71,559	1,60,919	64,520	27,380
1924	1,82,901	1,39,733	11,508	3,24,142	74,930	1,35,048	74,310	25,814
1925	4,10,240	1,75,784	9,209	5,95,233	58,700	1,53,511	67,334	34,605
1926	98,933	2,08,789	6,981	3,14,640	51,264	1,46,601	10,381	34,986
1927	2,03,258	1,99,228	4,524	4,07,010	44,852	1,17,573	46,484	2,43,232
1928	1,32,608	1,82,302	5,745	3,20,655	45,090	1,09,412	16,452	50,041
1929	2,52,108	1,50,938	5,804	4,08,850	43,294	1,77,594	75,324	48,884
1930	37,654	1,73,020	3,394	2,14,068	44,694	78,789	7,469	50,126

* Plantations were leased for season 1929/30.

